Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	48	("6253208" "6449657" "5944793" "6023684" "6226635" "6226635" "6131118" "6278993" "6591266" "6173279" "6282281" "6466570" "6173310" "6260050" "6269393" "6353825" "5729689" "6112279" "6049821" "6012067" "6338082" "6418448" "6442549" "6732117" "6480508" "6154766" "6122627" "6134540" "6226637" "6226637" "6477527" "6381627" "5907837" "5918017" "5794232" "5999973" "6169992" "6144958" "6148296" "6460043" "6654749" "6185567" "6014660" "6058429" "6732105" "6789073" "6836769" "6411966" "5423037" "5555404").pn.	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:10
L2	0	1 and quadtree	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:08
L3	16	1 and optimiz$4	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:09
L4	0	1 and query near3 conered	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:10
L5	0	1 and query near3 covered	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:10
L6	47	1 and query near3area	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:10
L7	2	1 and query near3 area	US-PGPUB; USPAT; EPO	OR	OFF	2005/01/25 12:10

STIC Search Report
EIC 2100

USPTO

STIC Database Tracking Number: 143114

TO:	From:
Susan F Rayyan Location: rnd 3c05 Art Unit : 2167 Tuesday, January 25, 2005 Case Serial Number: 10/022788	David Holloway Location: EIC 2100 RND 4B19 Phone: 2-3528 david.holloway@uspto.gov

Search Notes

Dear Examiner Rayyan,

Attached please find your search results for above-referenced case.
Please contact me if you have any questions or would like a re-focused search.

David

sira
Search and Information Resources Administration

STIC EIC 2100 Search Request Form

143/14

Today's Date: Jan 25, 2005

What date would you like to use to limit the search?
Priority Date: 12/17/01 Other: AT&T

Name Susan Rayyan

AU 2167 Examiner # 72889

Room # 3C-05 Phone 24117

Serial # 10/022,788

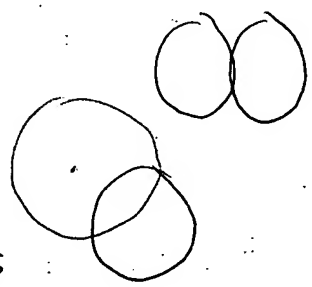
Format for Search Results (Circle One):
PAPER DISK EMAIL

Where have you searched so far?
USP DWPI EPO JPO ACM IBM TDB
IEEE INSPEC SPI Other _____

Is this a "Fast & Focused" Search Request? (Circle One) YES NO
A "Fast & Focused" Search is completed in 2-3 hours (maximum). The search must be on a very specific topic and meet certain criteria. The criteria are posted in EIC2100 and on the EIC2100 NPL Web Page at http://ptoweb/patents/stic/stic-tc2100.htm.

What is the topic, novelty, motivation, utility, or other specific details defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, definitions, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract, background, brief summary, pertinent claims and any citations of relevant art you have found.

Query generation: uses spacial data structure (Quadtree) to track which parts of a region has been searched by previous query. Coverage information is used to determine where to perform next query to minimize overlap.



Inventor: Simon Byers
AT&T

priority

Voronoi diagram
quadtree
uncovered quadtree node

Keywords: geographic queries
query coverage
optimize queries
minimize overlaps
spacial data structures

STIC Searcher David Holloway Phone 2-3528

Date picked up 1-25-05 Date Completed 1-25-05

DIALOG

WWW

```
Set     Items   Description
S1    1560177   QUERY OR QUERIES OR SEARCH? OR SEEK? OR FIND OR LOCATE OR -
            LOCATING
S2     916074   DATAPOINT? OR CENTROID? OR DATA()(CENTER? OR NEXUS OR FOCUS
             OR FOCII) OR POINT?
S3     589817   RADIUS OR RADII OR CIRCUMFERENCE? OR DIAMETER? OR BOUNDARY
            OR BOUNDARIES
S4    1313435   COVERAGE? OR AREA? OR COVERED OR ENCOMPASS? OR ENCIRCL? OR
            WITHIN OR INSIDE
S5     165616   OVERLAP? OR OVER()(LAP OR LAPS OR LAPPING OR LAY OR LIE OR
            LYING OR LAYS)
S6        344   VORONOI OR DIRICHLET OR THIESSEN DELAUNAY
S7    1081322   GEOGRAPH? OR SPATIAL? OR SPACIAL? OR SPACE? OR AREA OR ARE-
            AS OR GRAPH OR GRAPHS OR VISUALI?
S8        142   S1(S)S2(S)S3(S)S4(S)S5(S)S7
S9         19   S1(10N)S2(10N)S3(10N)S4(10N)S5
S10       418   S1(5N)S7(10N)S4(10N)S5
S11         2   S10 AND S6
S12       142   S10(S)(S2 OR S3)
S13       269   S8 OR S9 OR S11 OR S12
S14        62   S13 AND IC=(G06F? OR H04L?)
S15        49   S14 NOT AD>20011217
S16        21   S15 AND IC=(G06F-007? OR G06F-017? OR H04L-012?)
S17        21   IDPAT (sorted in duplicate/non-duplicate order)
S18        21   IDPAT (primary/non-duplicate records only)
File 348:EUROPEAN PATENTS 1978-2005/Jan W03
         (c) 2005 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20050120,UT=20050113
         (c) 2005 WIPO/Univentio
```

18/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01660515
System and method for storing geographic data on a physical storage medium
Vorrichtung und Verfahren zum Speichern von geographischen Daten auf einem physikalischen Speichermedium
Dispositif et methode pour la memorisation de donnees geographiques sur un support de memoire physique

PATENT ASSIGNEE:
Navigation Technologies Corporation, (2410913), The Merchandise Mart, Suite 900, Chicago, Illinois 60654, (US), (Applicant designated States: all)
INVENTOR:
Israni, Vijaya S., 4431 Bayside Circle, Hoffman Estates Illinois 60195, (US)
Ashby, Richard A., 3 Brookview Drive, Flat Rock, North Carolina 28731, (US)
Bouzide, Paul M., 1747 West Henderson Street, Chicago Illinois 60614, (US)
Jasper, John C., 824 North Drury Lane, Arlington Heights Illinois 60004, (US)
Fernekes, Robert P., 482 West Clare, Wooddale Illinois 60191, (US)
Nyczak, Gregory M., 835 The Pines, Hinsdale, Illinois 60521, (US)
Smith, Nicholas E., 209 Pleasant Street, Oak Park Illinois 60302, (US)
Lampert, David S., 650 Blackstone Place, Highland Park Illinois 60035, (US)
Meek, James A., 1523 East Anderson Drive, Palatine Illinois 60067, (US)
Crane, Aaron I., 670 Wren Avenue, Palatine Illinois 60067, (US)
LEGAL REPRESENTATIVE:
McLeish, Nicholas Alistair Maxwell et al (74621), Boult Wade Tennant Verulam Gardens 70 Gray's Inn Road, London WC1X 8BT, (GB)
PATENT (CC, No, Kind, Date): EP 1365212 A1 031126 (Basic)
APPLICATION (CC, No, Date): EP 2003077520 971024;
PRIORITY (CC, No, Date): US 740295 961025
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
RELATED PARENT NUMBER(S) - PN (AN):
EP 838663 (EP 97308527)
INTERNATIONAL PATENT CLASS: G01C-021/32; G01C-021/20; G08G-001/0968; G09B-029/10; **G06F-017/30** ; G08G-001/0969
ABSTRACT WORD COUNT: 321
NOTE:
Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200348	1516
SPEC A	(English)	200348	31166
Total word count - document A			32682
Total word count - document B			0
Total word count - documents A + B			32682

...INTERNATIONAL PATENT CLASS: **G06F-017/30**

...SPECIFICATION needed for map display intersects a small part of a cartographic parcel. Because the data **within** the parcel are organized into cells, only the data contained in the two cells intersecting the map display **area** need be examined. The cells **overlapping** a given rectangle can be found by **searching** a kd-tree internal to the cartographic parcel, each of whose leaf nodes represents a...

...interval of polyline records, a contiguous interval of polygon records, and a contiguous interval of **point** records.
FIG. 11B illustrates an internal kd-tree entry for a cartographic parcel. Cuts for...

18/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01583922
X.500 System and methods providing data tolerance
X.500-Systeme und entsprechende Methoden mit Bereitstellung einer Datentoleranz
Systeme et procede de X.500 fournissant tolerance de donnees
PATENT ASSIGNEE:
Computer Associates Think, Inc., (2947530), One Computer Associates Plaza , Islandia, New York 11749, (US), (Applicant designated States: all)
INVENTOR:
Harvey, Richard Hans, 4 Odette Court, Ringwood, VIC 3134, (AU)
LEGAL REPRESENTATIVE:
Dunlop, Hugh Christopher et al (59552), R G C Jenkins &Co., 26 Caxton Street, London SW1H 0RJ, (GB)
PATENT (CC, No, Kind, Date): EP 1313039 A2 030521 (Basic)
APPLICATION (CC, No, Date): EP 2003002798 950830;
PRIORITY (CC, No, Date): AU 94PM7842 940901; AU 94PM9586 941121
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
RELATED PARENT NUMBER(S) - PN (AN):
EP 777883 (EP 95930331)
INTERNATIONAL PATENT CLASS: **G06F-017/30**
ABSTRACT WORD COUNT: 77
NOTE:
Figure number on first page: 2A

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200321	914
SPEC A	(English)	200321	13148
Total word count - document A			14062
Total word count - document B			0
Total word count - documents A + B			14062

INTERNATIONAL PATENT CLASS: **G06F-017/30**

...SPECIFICATION PATH of the selected object.
* For each alias discovered, check to see if the alias **points** outside the current subtree and if it does repeat the previous step. Once all aliases have been resolved, a set of unique base objects will have been found (with no **overlapping areas**).
* Using the **Search** and Tree Tables, apply the filter (attribute/value conditions) and the scope (PATH LIKE PATH...

18/3,K/7 (Item 7 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01042597
Method and means of matching documents based on spatial region layout
Verfahren und Mittel um Dokumente zu Vergleichen auf der Basis des raumlichen Layouts
Methode et moyens pour la comparaison de documents basee sur la disposition spatiale des regions
PATENT ASSIGNEE:
Xerox Corporation, (219786), Xerox Square - 20A, Rochester, New York 14644, (US), (Proprietor designated states: all)
INVENTOR:
Syeda-Mahmood, Tanveer F., 1 Scarborough Park, Rochester, New York 14625, (US)
LEGAL REPRESENTATIVE:
Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 923044 A2 990616 (Basic)
EP 923044 A3 010627
EP 923044 B1 031217
APPLICATION (CC, No, Date): EP 98121791 981116;
PRIORITY (CC, No, Date): US 975466 971121
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G06K-009/20; **G06F-017/30**
ABSTRACT WORD COUNT: 133
NOTE:
Figure number on first page: 3A

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	199924	396
CLAIMS B	(English)	200351	583
CLAIMS B	(German)	200351	565
CLAIMS B	(French)	200351	666
SPEC A	(English)	199924	3427
SPEC B	(English)	200351	3664
Total word count - document A			3824
Total word count - document B			5478
Total word count - documents A + B			9302

...INTERNATIONAL PATENT CLASS: **G06F-017/30**

...SPECIFICATION V(M,I) where (intersection) and (union or logical sum) are done over the region **areas** .

The above formula accounts for the extent of match as measured by the extent of **spatial** **overlap** of corresponding regions, and the extent of mismatch as measured by the **areas** of regions that do not **find** the match (included in the denominator term).

C. Examples
Referring to Figure 4, a flow...

...SPECIFICATION onto the object I to give the projected rectangular regionl R'i)) as follows. The **centroid** of the region CMi)) is moved to the position Verification is then done by seeing...

...V(M,I) where (intersection) and (union or logical sum) are done over the region **areas** .

The above formula accounts for the extent of match as measured by the extent of **spatial** **overlap** of corresponding regions, and the extent of mismatch as measured by the **areas** of regions that do not **find** the match (included in the denominator term).

C. Examples

Referring to Figure 4, a flow...

18/3,K/10 (Item 10 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00929775 **Image available**
UNIFIED GEOGRAPHIC DATABASE AND METOD OF CREATING, MAINTAINING AND USING THE SAME
BASE DE DONNEES GEOGRAPHIQUE UNIFIEE ET PROCEDE DE CREATION, D'ENTRETIEN ET D'UTILISATION DE CETTE DERNIERE
Patent Applicant/Assignee:
GO2 SYSTEMS INC, 18400 Von Karman Avenue, 9th Floor, Irvine, CA 92612, US
,
Inventor(s):
HANCOCK Lee S, 4 Hampshire Court, Newport Beach, CA 92660, US,
HASTINGS Jordan, 55 Hitchcock Way, #200, Santa Barbara, CA 93105, US,
MORRISON Scott D, 24111 Castilla Lane, Mission Viejo, CA 92691, US,
Legal Representative:
FARSHAD Farjami (agent), Farjami & Farjami LLP, 16148 Sand Canyon, Irvine, CA 92618, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200263853 A2-A3 20020815 (WO 0263853)
Application: WO 2001US50085 20011018 (PCT/WO US01050085)
Priority Application: US 2000707213 20001103
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 27715

Main International Patent Class: **H04L-029/12**
International Patent Class: **G06F-017/30**
Fulltext Availability:
Detailed Description

Detailed Description
... square and all of the same size, e.g., 100 kin X 100 kni, with **overlapping** portions of districts nested with each other. However, in alternative embodiments, sparsely populated **areas** may have larger districts, and densely populated **areas** may have smaller districts. The districts may.also be quasi-rectangular, following latitude and longitude lines. In more densely populated **areas** , it is possible that a particular location will be **within** the **boundaries** of two or more districts. In addition, user-defined districts, reference **points** , and grid sizes are possible. For example, a **search** and rescue operation may establish a reference **point** and grid size convenient for a D particular **search area** , or a group of hikers may choose a reference **point** and grid size appropriate for a particular outing.

After the districts have been selected and...

...the WGRS and the domainname like addressing system based on the same allows multi-precision **searches** to be performed. The issue of increased resolution is discussed below.

Also, it is likely that there will be an **overlap area** 13 that is formed at the intersection of districts. Within this overlap area 13, any ...

...the preferred embodiment, a locational. system can provide a locational

address relative to any reference **point** or district by simply toggling between reference **points** . Although the grids 1, 3 are shown at an angle relative to one another, the...

18/3,K/12 (Item 12 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00883988 **Image available**
CONTINUOUS LOCAL INFORMATION DELIVERY SYSTEM AND METHOD
SYSTEME FOURNISSANT DES INFORMATIONS LOCALES EN CONTINU ET PROCEDE ASSOCIE
Inventor(s):
CHAN Jawe, 3072 Baronscourt Way, San Jose, CA 95132, US,
Patent Applicant/Inventor:
CHANG Ting-Mao, 2126 Villanova Road, San Jose, CA 95130, US, US (Residence), US (Nationality)
Legal Representative:
CHANG Ting-Mao (commercial rep.), 2126 Villanova Road, San Jose, CA 95130, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200217141 A2-A3 20020228 (WO 0217141)
Application: WO 2001US26296 20010821 (PCT/WO US0126296)
Priority Application: US 2000227454 20000823
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 14373

Main International Patent Class: **G06F-017/30**
Fulltext Availability:
Detailed Description

Detailed Description
... automatic positioning system. The search topic of each query is the same, but the search **area** is moving according to user's position. A circular search area is a good choice...

...at the position of the car or user and the user may pre-select a **search** radius. Depending on the speed of the car and the radius, two or more continuous **search** circles may **overlap** each other.
In Fig 3, a **searching** task does a **search** within area 301 and then another **search** within **area** 302 after a period of time has passed. The user may receive updated information related to the **overlapped area** 303 if the information changes between two **searches** . The preferred embodiment of the present invention can remove the old **search** results on the **overlapped area** and update with the latest **search** results. If the user prefers to keep the old **search** result, the invention could present all the **search** results according to the received time of each search result. For example, present the latest...information search quality. In Fig 4, a car is moving out of user-specified search **area** before the next query returns the search results. It makes the first search at 401...

...area 403, which was missed by both queries. However, too much overlap in the search **areas** causes too much redundancy and too little **search area** coverage causes poor **search** quality. The preferred embodiment of the invention could use a predefined **search area** system that minimizes the **overlap** between **searches areas** , for example pre-selected discrete **areas** , like malls, continuous square grids, or continuous pentagonal cells. A **search** task then invokes a **search** activity when the user approaches or reaches the boundary of the already covered **geographic area** . Giving each search **area** in a predefined

searching area system an identifier, all search area definitions in a query could be replaced with identifiers and an identifier for the predefined search **area** system. If the server already knows which predefined search area system is being using, the...the driver makes a right turn on 1103 and the subsystem instandv aenerates a new **searching area** , tile 1101. Since file 1101 is a bit **overlappedwith** tile 1100, the **query** synthesis subsystem will generate the following **query** instruction as the new **query** .

1. Topic: five cheapest gasoline sale
2. **Search Area** : tile 1 1 01 - tile 1 1 00
3. Tile 1101: rectangle at coordinates 55' ...using the predefined search area system or not. If the user chose the predefined search **area** system, step 6 finds a predefined search area according to the current moving condition or...

...covers the future travel route, which could be a predefined travel route. After getting the **search** area, step 8 gets the constraints from die dynamic constraint subsystem to further adjust the **search area** . Step 9 checks the previous **search area** for **overlapped** with the current **search area** . If there is an **overlap** , the **query** synthesis subsystem synthesizes a new **search area** by excluding the previous **search areas** at step 1 0. Step 1 1 sets the final **search area** to the event. Then, step 12 starts the process to estimate the event trigger condition...

...13 calculates the buffer time Tb. The distance from user's current position to the **boundary** of the final search area or the **boundary** of current covered search area is Lr. The buffer time is Lr divided by the ...

...the event. For example, therigger zone is V * Tt wide surrounding belt area around the **boundary** final search area. After setting the trigger condition, continue to step @ of Fig 19 to...

18/3,K/19 (Item 19 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00562135 **Image available**
A METHOD AND APPARATUS OF EXPANDING WEB SEARCHING CAPABILITIES
PROCEDE ET APPAREIL D'EXTENSION DES CAPACITES DE RECHERCHE SUR LE WEB
Patent Applicant/Assignee:
VICINITY CORPORATION,
Inventor(s):
HIMMELSTEIN Martin W,
ASPINWALL Dwight,
HALSTEAD Gerald F,
GOLDENSHER Charles,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200025508 A1 20000504 (WO 0025508)
Application: WO 99US23772 19991011 (PCT/WO US9923772)
Priority Application: US 98182746 19981028
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ TZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 8460

...International Patent Class: **G06F-017/00** ...

... **G06F-017/30** ...

... G06F-017/60
Fulltext Availability:
Detailed Description

Detailed Description
... and a distance of 50 miles. The area key producer 26 may first generate a **point** (textual) key for the partial address "Monterey, California." Inasmuch as no complete street address has been specified, the area key producer may select an arbitrary **point** within Monterey, California, or, for example, choose the location of the town's center and generate a corresponding **point** key. Based on this **point** key, area keys will be produced for a set of area keys that cover a 50 mile **radius** circle surrounding that **point** key. Alternatively, an area key that includes Monterey within its area may be used as...

...square, rectangle, triangle, etc.) may be used instead of a circle. Again, the selection of **area** keys may result in an overinclusive set.

Figure 3 shows **area** keys selection in one embodiment of the invention. An origin **point** with a fifty mile **radius** circle is shown.

The quads **overlapping** , or intersecting, the circle would comprise the set of **area** keys used in this **search** . In this case, the set of **area** keys
could be Q0313, Q0331, Q1202, and Q1220. Because a relatively small part of quads Q0331, Q1202, and Q1220 is **covered** , a better fit may be derived by subdividing those quads and using the set Q0313...modified by specifying that the any documents must have
had one of a set of **area** keys saved for them at index time. That set of **area** keys represent the **areas** that fully tile (and **overlap**) the predetermined region (e.g., circle) defined by the **search** center (and the radius).

One embodiment of a process to **find** the set of **area** keys that **overlap** that circle includes the following operations performed by the **area** key generator.

First, the **area** key generator converts center coordinates and the radius to the same units, if not already expressed as such. Then, **area** key generator chooses a length for the **area** keys to be returned. This number can be table driven based on the **radius** desired. The larger the **radius** , the shorter the desired area key length.

Next, area key generator calculates a bounding box...

```
Set     Items   Description
S1     366263   QUERY OR QUERIES OR SEARCH? OR SEEK? OR FIND OR LOCATE OR -
             LOCATING
S2    1081765   DATAPOINT? OR DATA()(CENTER? OR NEXUS OR FOCUS OR FOCII) OR
              POINT?
S3     993434   RADIUS OR RADII OR CIRCUMFERENCE? OR DIAMETER? OR BOUNDARY
             OR BOUNDARIES
S4    3193297   COVERAGE? OR AREA? OR COVERED OR ENCOMPASS? OR ENCIRCL? OR
             WITHIN OR INSIDE
S5     173248   OVERLAP? OR OVER()(LAP OR LAPS OR LAY OR LIE OR LAYS)
S6         99   VORONOI OR DIRICHLET OR THIESSEN DELAUNAY
S7      44069   S1 AND (S2 OR CENTER OR CENTROID?)
S8       1136   S7 AND S3 AND S4
S9         36   S8 AND S5
S10        11   S1 AND S6
S11        47   S9 OR S10
S12        37   S11 NOT AD>20011217
S13        11   S12 AND IC=(G06F? OR H04L?)
S14    173543   S5 OR OVER()LAPPING
S15      1427   S14 AND S4 AND S1
S16       317   S15 AND (S2 OR S3)
S17    107049   MC=(T01-N02A3B OR T01-N02A3C OR T01-S03 OR W01-A06G)
S18        10   S17 AND S16
S19         8   S18 NOT S11
S20         8   IDPAT (sorted in duplicate/non-duplicate order)
S21         8   IDPAT (primary/non-duplicate records only)
S22     54711   S1 AND (GEOGRAPH? OR SPATIAL? OR SPACE OR AREA OR GRAPHIC?
             OR VISUALI? OR SPACIAL?)
S23       193   S22 AND S2 AND S14
S24        22   S3 AND S4 AND S23
S25         0   S23 AND S6
S26         6   S24 AND IC=(G06F? OR H04L?)
S27         1   S26 NOT (S13 OR S19)
File 347:JAPIO Nov 1976-2004/Aug(Updated 041203)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2005/UD,UM &UP=200504
         (c) 2005  Thomson Derwent
```

3/9/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015597833 **Image available**
WPI Acc No: 2003-659988/200362
XRPX Acc No: N03-526278

Machine-readable medium stores data retrieval program to transmit queries to corresponding selected proxy server services for transmission to target servers

Patent Assignee: AT & T CORP (AMTT); BYERS S D (BYER-I)
Inventor: **BYERS S D**
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030115185	A1	20030619	US 200122788	A	20011217	200362	B
CA 2413854	A1	20030617	CA 2413854	A	20021210	200362	

Priority Applications (No Type Date): US 200122788 A 20011217
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030115185	A1		13	G06F-007/00	
CA 2413854	A1	E		G06F-017/30	

Abstract (Basic): US 20030115185 A1

NOVELTY - A set of queries is transmitted to corresponding selected proxy server services for transmission to the target servers. A reply is received from the target server corresponding to proxy server service, for each query.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) method for retrieving data accessible by posing queries to target server; and

(2) method of configuring client machine connected to network.

USE - Machine-readable medium storing information retrieval program for larger scale web access.

ADVANTAGE - Usage of random proxy servers, enables processing of large number of queries in parallel, hence minimizes target server latency and web traffic delays.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram illustrating the proxy server services selection method.

pp; 13 DwgNo 1/7

Title Terms: MACHINE; READ; MEDIUM; STORAGE; DATA; RETRIEVAL; PROGRAM; TRANSMIT; QUERY; CORRESPOND; SELECT; SERVE; SERVICE; TRANSMISSION; TARGET ; SERVE
Derwent Class: T01; W01
International Patent Class (Main): **G06F-007/00** ; **G06F-017/30**
International Patent Class (Additional): **H04L-012/16**
File Segment: EPI
Manual Codes (EPI/S-X): T01-N02A3B; T01-N02A3C; T01-S03; W01-A06G

```
Set     Items   Description
S1    1701418   QUERY OR QUERIES OR SEARCH? OR SEEK? OR FIND OR LOCATE OR -
            LOCATING
S2    2654592   DATAPOINT? OR CENTROID? OR DATA()(CENTER? OR NEXUS OR FOCUS
            OR FOCII) OR POINT?
S3    2359874   RADIUS OR RADII OR CIRCUMFERENCE? OR DIAMETER? OR BOUNDARY
            OR BOUNDARIES
S4    5760811   COVERAGE? OR AREA? OR COVERED OR ENCOMPASS? OR ENCIRCL? OR
            WITHIN OR INSIDE
S5     234859   OVERLAP? OR OVER()(LAP OR LAPS OR LAPPING OR LAY OR LIE OR
            LYING OR LAYS)
S6      41103   VORONOI OR DIRICHLET OR THIESSEN DELAUNAY
S7    6331903   GEOGRAPH? OR SPATIAL? OR SPACIAL? OR SPACE? OR AREA OR ARE-
            AS OR GRAPH OR GRAPHS OR VISUALI?
S8      51098   S1(3N)S7
S9        233   S8 AND S2 AND S3 AND (S4 OR S5)
S10       197   S6 AND S8
S11         6   S8 AND S2 AND S3 AND S4 AND S5
S12      7376   S4(3N)S5
S13         1   S9 AND S12
S14        71   S8 AND S12
S15         9   S14 AND (S2 OR S3 OR S6)
S16      3503   S1 AND S2 AND S3 AND S4
S17      1933   S7 AND S16
S18        49   S17 AND S5
S19       119   S18 OR S15 OR S14 OR S11
S20        80   RD (unique items)
S21        64   S20 NOT PY>2001
S22        64   S21 NOT PD=20011217:20031217
S23        64   S22 NOT PD=20031217:20050122
S24        63   S23 NOT CY>2001
S25        63   S24 NOT CD>20011217
File   8:Ei Compendex(R) 1970-2005/Jan W3
         (c) 2005 Elsevier Eng.  Info. Inc.
File  35:Dissertation Abs Online 1861-2004/Dec
         (c) 2004 ProQuest Info&Learning
File  65:Inside Conferences 1993-2005/Jan W4
         (c) 2005 BLDSC all rts. reserv.
File   2:INSPEC 1969-2005/Jan W3
         (c) 2005 Institution of Electrical Engineers
File  94:JICST-EPlus 1985-2005/Dec W3
         (c)2005 Japan Science and Tech Corp(JST)
File 111:TGG Natl.Newspaper Index(SM) 1979-2005/Jan 21
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File   6:NTIS 1964-2005/Jan W3
         (c) 2005 NTIS, Intl Cpyrght All Rights Res
File 144:Pascal 1973-2005/Jan W2
         (c) 2005 INIST/CNRS
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File  34:SciSearch(R) Cited Ref Sci 1990-2005/Jan W3
         (c) 2005 Inst for Sci Info
File  62:SPIN(R) 1975-2005/Nov W1
         (c) 2005 American Institute of Physics
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Nov
         (c) 2004 The HW Wilson Co.
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
```

25/5/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06385233 E.I. No: EIP03207472165
Title: Using browsing to improve content-based image retrieval
Author: Jin, Jesse S.; Kurniawati, Ruth; Xu, Guangyu; Bai, Xuesheng
Corporate Source: University of New South Wales, Sydney, NSW 2052, Australia
Conference Title: Multimedia Storage and Archiving Systems III
Conference Location: Boston, MA, United States Conference Date: 19981102-19981104
Sponsor: SPIE
E.I. Conference No.: 60962
Source: Proceedings of SPIE - The International Society for Optical Engineering v 3527 1998. p 101-109
Publication Year: 1998
CODEN: PSISDG ISSN: 0277-786X
Language: English
Document Type: CA; (Conference Article) Treatment: T; (Theoretical)
Journal Announcement: 0305W4
Abstract: Many content-based methods have been proposed to retrieve images from multimedia databases. Current index structures, such as R*-tree, SS-tree and SS**+-tree, have a large **overlapping area** among their nodes, especially at the high level of the indexing tree. The **overlapping area** causes the **search** engine to compare a large number of nodes and hence, it is very inefficient to retrieve at very high levels of the index tree. We present a scheme to combine browsing with retrieval in searching for images. The browser uses the content-based index structure of image databases. It provides users with a visual tool to narrow the search quickly to a small region and to avoid a large number of comparisons. Combined with retrieval, it produces a very efficient content-based retrieval method. 38 Refs.
Descriptors: *Content based retrieval; Indexing (of information); Web browsers; Multimedia systems; Query languages; Trees (mathematics); Heuristic methods; Algorithms
Identifiers: Image databases
Classification Codes:
723.2 (Data Processing); 903.1 (Information Sources & Analysis); 723.5 (Computer Applications); 723.3 (Database Systems); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory)
723 (Computer Software, Data Handling & Applications); 903 (Information Science); 921 (Applied Mathematics)
72 (COMPUTERS & DATA PROCESSING); 90 (ENGINEERING, GENERAL); 92 (ENGINEERING MATHEMATICS)

25/5/7 **(Item 7 from file: 8)**
DIALOG(R)File 8:Ei Compendex(R)

02852571 E.I. Monthly No: EI9002018769
Title: Algorithm for locating candidate labeling boxes within a polygon.
Author: van Roessel, Jan W.
Corporate Source: TGS Technology Inc, Sioux Falls, SD, USA
Source: American Cartographer v 16 n 3 Jul 1989 p 201-209
Publication Year: 1989
CODEN: AMCADV ISSN: 0094-1689
Language: English
Document Type: JA; (Journal Article) Treatment: A; (Applications); G; (General Review)
Journal Announcement: 9002
Abstract: Vector-based **geographic** information systems usually require annotation, such as a polygon number or attribute data, in a suitable location **within** a polygon. Traditional methods usually compute the polygon **centroid** , test the **centroid** for inclusion or exclusion, and select some alternative **point** when the **centroid** falls outside the polygon. Two problems are associated with this approach: (1) the text can be centered on the **point** , but may be placed in a visually awkward place, and (2) part of the text may fall outside the polygon and may **overlap** other polygon **boundaries** or other text labels. An algorithm is presented that circumvents both of these problems, by computing a number of horizontal candidate labeling rectangles (boxes) **within** a polygon from which a suitable selection can be made or from which one may conclude that the text label does not fit the polygon. (Author abstract) 10 Refs.
Descriptors: *MAPS AND MAPPING--*Computer Applications; COMPUTER PROGRAMMING--Algorithms
Identifiers: CANDIDATE LABELING BOXES; TEXT BLOCK LABELS
Classification Codes:
405 (Construction Equipment & Methods); 723 (Computer Software)
40 (CIVIL ENGINEERING); 72 (COMPUTERS & DATA PROCESSING)

25/5/9 (Item 9 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

01445755 E.I. Monthly No: EIM8309-068095
Title: **USING** GEOGRAPHICAL **COORDINATES TO** SEARCH **BIBLIOGRAPHICAL GEOSCIENCE DATABASES.**
Author: Farrar, Ralph K.; Lerud, Joanne V. .
Conference Title: Online '82 Conference Proceedings.
Conference Location: Atlanta, Ga, USA Conference Date: 19821101
Sponsor: Online Inc, Weston, Conn, USA
E.I. Conference No.: 02035
Source: Online Conference Proceedings 1982. Publ by Online Inc, Weston, Conn, USA p 256-262
Publication Year: 1982
CODEN: OCPRDR
Language: English
Document Type: PA; (Conference Paper)
Journal Announcement: 8309
Descriptors: *DATABASE SYSTEMS
Identifiers: BIBLIOGRAPHICAL GEOSCIENCE **SEARCH** ; **GEOGRAPHIC** TERMS; DOCUMENTS INDEXING AND RETRIEVAL; OCEAN **AREAS** ; GEOGRAPHICAL **AREAS OVERLAPPING** ; CHANGEABLE GEOGRAPHIC NAMES; **GEOGRAPHIC** COORDINATES; COORDINATE **SEARCHING** VERSUS TERM SEARCHING
Classification Codes:
723 (Computer Software); 901 (Engineering Profession)
72 (COMPUTERS & DATA PROCESSING); 90 (GENERAL ENGINEERING)

01162855 ORDER NO: AAD91-20481

ACCESS TO GEOGRAPHIC CONCEPTS IN ONLINE BIBLIOGRAPHIC FILES: EFFECTIVENESS OF CURRENT PRACTICES AND THE POTENTIAL OF A GRAPHIC INTERFACE (INFORMATION RETRIEVAL)

Author: HILL, LINDA LADD
Degree: PH.D.
Year: 1990
Corporate Source/Institution: UNIVERSITY OF PITTSBURGH (0178)
Source: VOLUME 52/02-A OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 327. 212 PAGES
Descriptors: INFORMATION SCIENCE; LIBRARY SCIENCE; GEOGRAPHY, SOCIAL
Descriptor Codes: 0723; 0399; 0366

The focus of this research was to determine the accuracy and predictability, and hence the effectiveness, of current practices of indexing geographic concepts for retrieval from online bibliographic files within the domain of earth sciences. The methodology was based on the measurement of geographic similarity between pairs of documents. The geographic study area for each document in a test file of earth science documents was represented in at least three ways: by a map and by the text of bibliographic records from two online bibliographic files. The geographic similarity of the documents to one another was measured spatially using the maps and linguistically using the text, both indexing terminology and free text, under both Boolean and vector retrieval models and with frequency weighting of terms. Correlation analysis of the map-based geographic similarities to the text-based similarities was used to evaluate the effectiveness of geographic representation. Some records also included representation of the geographic concepts with latitude and longitude coordinates which were compared spatially to the map-based representations of the study areas and to the text-based representations. Optimal recall and precision values for three case study areas, using text and coordinates, were also derived, using the **overlap** of map **areas** to define the relevant sets. Results indicate only weak correlations between the text-based and the spatially-based geographic representations (with a range of 0.19 to 0.38), related to the imprecise nature of words in representing geographic areas and to the lack of predictability of the terminology used to describe a particular area. Recall and precision values for optimal search strategies for three case studies exhibited a great range of values (both ranged from 15% to 80%), with average values of 50% recall and 41% precision. Free text performed better than index terms in both correlation values to map-based **geographic** similarities and in **search** strategies; the advantage was based primarily on individual words in the index term phrases.

25/5/30 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

6566248 INSPEC Abstract Number: C2000-05-7840-039

Title: A map mosaicking method using opportunistic search approach with a blackboard structure

Author(s): Jonghyon Yi; Min Suk Lee; Jaihie Kim
Author Affiliation: Dept. of Electr. & Comput. Eng., Yonsei Univ., Seoul, South Korea

Conference Title: Document Analysis Systems: Theory and Practice. Third IAPR Workshop, DAS'98. Selected Papers (Lecture Notes in Computer Science Vol.1655) p.322-35
Editor(s): Lee, S.-W.; Nakano, Y.
Publisher: Springer-Verlag, Berlin, Germany
Publication Date: 1999 Country of Publication: Germany xi+377 pp.
ISBN: 3 540 66507 2 Material Identity Number: XX-1999-02853
Conference Title: Document Analysis Systems: Theory and Practice. Third IAPR Workshop, DAS'98. Selected Papers
Conference Date: 4-6 Nov. 1998 Conference Location: Nagono, Japan
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P)

Abstract: Map mosaicking integrates two or more map images having a coincident area by computing the rotational angle and the vertical and horizontal distances that a map image has to move in order to **overlap** the coincident **area** . A solution to the problem is represented as a **point** in a parameter space with three axes: one for the rotational angle and the others for the vertical and horizontal distances. We extract local features from each map image, match them to make feature pairs, and project the feature pairs on to the parameter space. Traditional approaches using parameter spaces have suffered from a huge **search space** and computing time, since they project all the feature pairs on to the parameter **space** and **search** for solutions by iterative optimization methods. We propose a new method that can give a solution, not by projecting all the feature pairs on to the parameter **space** but by **searching** opportunistically in a blackboard structure. (8 Refs)

Subfile: C
Descriptors: blackboard architecture; cartography; document image processing; feature extraction; image registration; search problems
Identifiers: map mosaicking method; opportunistic searching; blackboard structure; map images; coincident area; rotational angle; vertical distance ; horizontal distance; map overlapping; parameter space; local feature extraction; feature pairs; feature matching; projection
Class Codes: C7840 (Geography and cartography computing); C5260B (Computer vision and image processing techniques); C6170K (Knowledge engineering techniques); C6130D (Document processing techniques)

Complete

25/5/33 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

5902570 INSPEC Abstract Number: C9806-7840-004
Title: A quadtree clustering algorithm for efficient spatial query **processing**
Author(s): Kim Joo-Hyoung; Hong Bong-Hee
Journal: Journal of KISS(B) (Software and Applications) vol.25, no.1 p.204-15
Publisher: Korea Inf. Sci. Soc,
Publication Date: Jan. 1998 Country of Publication: South Korea
CODEN: CKNBFV ISSN: 1226-2285
SICI: 1226-2285(199801)25:1L.204:QCAE;1-U
Material Identity Number: E346-98004
Language: Korean Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: There have been many works for developing spatial indexing and clustering methods for efficiently accessing a large volume of GIS data. To reduce I/O access time, it is necessary to support a clustering of logically related 2 dimensional data on the 1 dimensional disk. The paper presents a novel clustering method on the extended quadtree which does not fragment any spatial object. A number of clustering algorithms based on the gravity of geometry, the reference **point** of geometry, and the **overlap area** are devised and evaluated. The result of performance evaluation of this method is shown. (12 Refs)
Subfile: C
Descriptors: geographic information systems; quadtrees; query processing; spatial data structures; visual databases
Identifiers: quadtree clustering algorithm; **spatial query** processing; spatial indexing; clustering methods; GIS data; I/O access time; logically related 2 dimensional data; 1 dimensional disk; extended quadtree; geometry ; reference **point** ; **overlap area** ; performance evaluation
Class Codes: C7840 (Geography and cartography computing); C6160S (Spatial and pictorial databases); C1160 (Combinatorial mathematics); C6120 (File organisation); C7250R (Information retrieval techniques)

12

25/5/36 (Item 9 from file: 2)
DIALOG(R)File 2:INSPEC

4859938 INSPEC Abstract Number: C9503-6160S-001
Title: Modelling topological spatial relations: strategies for query processing
Author(s): Clementini, E.; Sharma, J.; Egenhofer, M.J.
Author Affiliation: Nat. Center for Geogr. Inf. & Anal., Maine Univ., Orono, ME, USA
Journal: Computers & Graphics vol.18, no.6 p.815-22
Publication Date: Nov.-Dec. 1994 Country of Publication: UK
CODEN: COGRD2 ISSN: 0097-8493
U.S. Copyright Clearance Center Code: 0097-8493/94/$6.00+.00
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: The paper investigates the processing of **spatial queries** with topological constraints, for which current database solutions are inappropriate. Topological relations, such as disjoint, meet, **overlap** , **inside** , and contains, have been well defined by the 9-intersection, a comprehensive model for binary topological relations. We focus on two types of queries: (1) "Which objects have a stated topological relation with a given spatial object?" and (2) "What is the topological relation between two given **spatial** objects?" Such **queries** are processed at two levels of detail. First, minimum bounding rectangles are used as an approximation of the objects' geometry and as a means of identifying candidates that might satisfy the query, Next, the nine intersections that determine the topological relations between candidate pairs are calculated. We present algorithms for minimizing these computations. Considerable performance can be gained by exploiting the semantics of spatial relations. We also compare the approach for a naive cost model, which assumes that all relations have the same frequency of occurrence, with a refined cost model, which considers the probability of occurrence of the topological relations. The strategies presented here have three key benefits: they are based on a well-defined formalism; they are customizable; and they can take into account important statistical information about the data. (24 Refs)
Subfile: C
Descriptors: geographic information systems; query processing; spatial data structures; visual databases
Identifiers: topological spatial relation modelling; query processing; **spatial queries** ; topological constraints; 9-intersection; binary topological relations; stated topological relation; spatial object; minimum bounding rectangles; object geometry; candidate pairs; naive cost model; refined cost model; statistical information; customizable; GIS; geographic information systems
Class Codes: C6160S (Spatial and pictorial databases); C6120 (File organisation); C7840 (Geography and cartography computing); C7250R (Information retrieval techniques)

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

(14)

yes

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18/3,K/12 (Item 12 from file: 349) yes

DIALOG(R)File 349:PCT FULLTEXT

2

00883988 **Image available**

CONTINUOUS LOCAL INFORMATION DELIVERY SYSTEM AND METHOD

SYSTEME FOURNISSANT DES INFORMATIONS LOCALES EN CONTINU ET PROCEDE ASSOCIE

Inventor(s):
CHAN Jawe, 3072 Baronscourt Way, San Jose, CA 95132, US,
Patent Applicant/Inventor:
CHANG Ting-Mao, 2126 Villanova Road, San Jose, CA 95130, US, US (Residence), US (Nationality)
Legal Representative:
CHANG Ting-Mao (commercial rep.), 2126 Villanova Road, San Jose, CA 95130, US,

Patent and Priority Information (Country, Number, Date):
Patent: WO 200217141 A2-A3 20020228 (WO 0217141)
Application: WO 2001US26296 20010821 (PCT/WO US0126296)
Priority Application: US 2000227454 20000823
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 14373

Main International Patent Class: **G06F-017/30**
Fulltext Availability:
Detailed Description

Detailed Description

... automatic positioning system. The search topic of each query is the same, but the search **area** is moving according to user's position. A circular search area is a good choice...

...at the position of the car or user and the user may pre-select a **search** radius. Depending on the speed of the car and the radius, two or more continuous **search** circles may **overlap** each other. In Fig 3, a **searching** task does a **search** within area 301 and then another **search** within **area** 302 after a period of time has passed. The user may receive updated information related to the **overlapped area** 303 if the information changes between two **searches** . The preferred embodiment of the present invention can remove the old **search** results on the **overlapped area** and update with the latest **search** results. If the user prefers to keep the old **search** result, the invention could present all the **search** results according to the received time of each search result. For example, present the latest...information search quality. In Fig 4, a car is moving out of user-specified search **area** before the next query returns the search results. It makes the first search at 401...

...area 403, which was missed by both queries. However, too much overlap in the search **areas** causes too much redundancy and too little **search area** coverage causes poor **search** quality. The preferred embodiment of the invention could use a predefined **search area** system that minimizes the **overlap** between **searches areas** , for example pre-selected discrete **areas** , like malls, continuous square grids, or continuous pentagonal cells. A **search** task then invokes a **search** activity when the user approaches or reaches the boundary of the already covered **geographic area** . Giving each search **area** in a predefined